

### **III. Remarks**

The Official Action of December 15, 2009 has been thoroughly studied. Accordingly, the changes presented herein for the application, considered together with the following remarks, are believed to be sufficient to place the application into condition for allowance.

By the present amendment each of claims 1 and 2 have been amended to recite a number average molecular weight of 300-1,400.

This change has been made in response to the Examiner's position that applicant's specification does not support number average molecular weights of greater than 1,400.

In addition the claims have been amended to limit the Mooney viscosity to 40-110 as supported in paragraph [0027] of applicants' original specification.

Further the limits of the propylene content in component (a) and the limits of the  $\alpha$ -olefin in component (b) have been amended as supported in paragraph [0027] of applicants' original disclosure.

Claims 7 and 8 have been canceled in favor of the amendments to claims 1 and 2.

New claims 9-12 have been added which are directed to further limitations on the propylene content in component (a) and the limits of the  $\alpha$ -olefin in component (b).

Entry of the changes to the claims is respectfully requested.

Claims 1-6 and 9-12 are pending in this application.

Claims 1-6 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Under this rejection the Examiner has taken the position that applicants' specification does not support number average molecular weight of more than 1,400.

In response to this rejection, the claims have been amended to recite a number average molecular weight of 300-1,400.

Claims 1, 2, 7 and 8 have been rejected under 35 U.S.C. §112, second paragraph.

Under this rejected the Examiner has taken the position that it was unclear if the recitation of the number average molecular weight was made in reference to the R group or the oligomer.

In response to this rejection, applicants have adopted the language "wherein the oligomer has.." which language the Examiner has courteously suggested.

Claims 1-8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2002/0068797 to Ikemoto et al. in view of U.S. Patent Application Publication No. 2004/0106723 to Yang et al. and U.S. Patent Application Publication No. 2004/0226393 to Hong.

For the reasons set forth below, it is submitted that each of the pending claims are allowable over the prior art of record and therefore, the outstanding rejection of the claims should properly be withdrawn.

Favorable reconsideration by the Examiner is earnestly solicited.

The Examiner has relied upon Ikemoto et al. as disclosing:

...a rubber composition comprising 1) a rubber compound composed of at least one of an ethylene-propylene-diene (EPDM) terpolymer and an ethylene-propylene (EPM) copolymer, 2) a peroxide vulcanizing agent, 3) a resorcinol-based compound, and 4) a melamine resin (¶0008-0011) (claims 1, 2). Example 1 of Ikemoto discloses a rubber composition comprising 100 parts of ESPRENE 501A, an EPDM rubber having a Mooney viscosity (ML 100°C) of 43 and comprising 50% ethylene, 4% diene, and, by extension, 46% propylene and 4.2 parts di-t-butyl peroxy-

diisopropylbenzene as a peroxide vulcanizing agent (§0038) (claims 1, 2). Example 7 of Ikemoto discloses a rubber composition prepared in a manner similar to Example 1, except ESPRENE 201, an EPM rubber having a Mooney viscosity (ML 100°C) of 43, was used instead of EPDM. Ikemoto teaches that the rubber compositions of US20020068797 may be used as rubber vibration insulators (§0036).

As stated above, Ikemoto recites that the rubber compound is composed of at least one of EPDM and EPM; Ikemoto therefore teaches the use of a rubber composition comprising a blend of EPDM and EPM. The examiner therefore takes the position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare a blend rubber comprising ESPRENE 501A and ESPRENE 201 to prepare a rubber composition as described in US20020068797 (claim 2).

Hong has been relied upon as disclosing a conventional crankshaft that is equipped with a damper pulley.

The Examiner concedes that:

Ikemoto and Hong are both silent regarding the addition of a C<sub>8</sub>-C<sub>12</sub>  $\alpha$ -olefin oligomer having a number average molecular weight of 300-1400 to EPDM/EPM.

The Examiner has relied upon Yang et al. as disclosing:

...the use of oligomers of C<sub>6</sub> to C<sub>14</sub>  $\alpha$ -olefins (claims 1, 2) (§0077) having a number average molecular weight in the range of **100-21,000** (claims 1, 2) (§0079) as a non-functional plasticizer (NPF) for polyolefin homopolymers and copolymers (§0002, 0039). Yang discloses that the polyolefin is present in the final composition at levels from 40 to 99.9% by weight, based on the total weight of polyolefin and NFP; by extension, the composition comprises 0.1 to 60% by weight of the NFP (claims 1, 2) (§0043). Yang discloses that the addition of the NFP results in a polymer composition having improved properties (§0007-0008).

The Examiner further states:

Ikemoto teaches that the polymer composition of US2002/0068797 may contain additives (§0033-0034). As taught by Yang, it was known in the art to use low molecular weight oligomers of C<sub>6</sub> to C<sub>14</sub>  $\alpha$ -olefins as plasticizers for polyolefin copolymer.

The Examiner therefore takes the position that:

...it would be obvious....to modify the damper rendered obvious by the combination of Ikemoto and Hong by adding 1-60% by weight of a C<sub>6</sub> to C<sub>14</sub> α-olefins having Mn of 100 to 21,00 to the EPDM/EPM composition, for the purpose of obtaining a damper having improved properties, as taught by Yang.

It is clear that Ikemoto et al. does not teach or suggest applicants' disclosed and claimed invention.

In this regard, Ikemoto et al. teach eliminating the need of an adhesive layer/composition in the fabrication of automobile hoses which involves the use of a composition that comprises: (a) a rubber composed of EPDM and EPM; (b) a resorcinol-based compound; and (c) a melamine resin.

The resorcinol-based compound functions as an adhesive and the melamine resin functions as an adhesive adjuvant.

As noted above the Examiner has relied upon Yang et al. as teaching:

...the use of oligomers of C<sub>6</sub> to C<sub>14</sub> α-olefins (claims 1, 2) (¶0077) having a number average molecular weight in the range of 100-21,000 (claims 1, 2) (¶0079) as a non-functional plasticizer (NPF) for polyolefin homopolymers and copolymers (¶0002, 0039).

In order to distinguish over the combination of Ikemoto et al., Yang et al. and Hong, independent claims 1 and 2 has been amended herein to recite that R in the formula CH<sub>2</sub>=CHR (applicants' α-olefin oligomer) is an alkyl group having 6-10 carbon atoms, with a Mooney viscosity of 40-110 and a number average molecular weight Mn of 300-1,400.

As noted, and relied upon by the Examiner, Yang et al. teaches of oligomers of C<sub>6</sub> to C<sub>14</sub> α-olefins having a number average molecular weight in the range of 100-21,000.

On page 4 of the Office Action under the *Response to Arguments* section the Examiner has cited *In re Wertheim* (191 USPQ 90 (CCPA 1976)) as holding that obviousness can be found in overlapping ranges.

The Examiner's reliance upon *In re Wertheim* comes from MPEP 2144.05. This section of the MEPE includes the statement that:

Applicants can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. (See *In re Woodruff*, 16 USPQ2d 1934 (Fed. Cir. 1990)).

In paragraph [0021] of applicants' original specification is it disclosed:

$\alpha$ -olefin oligomers having an Mn value of less than 300 undergoes volatilization at the cross-linking or heat aging, resulting in considerable deterioration of physical properties.

Thus applicants' have established a criticality of an MN value of at least equal to or greater than 300.

In contrast, in paragraph [0079] Yang et al. disclose:

PAO's useful in the present invention typically possess a number average molecular weight of from 100 to 21,000 in one embodiment, and from 200 to 10,000 in another embodiment, and from 200 to 7,000 in yet another embodiment, and from 200 to 2,000 in yet another embodiment, and from 200 to 500 in yet another embodiment.

As can be seen, while Yang et al. disclose Mn ranges that progressively limit the upper limit, Yang et al. maintains a lower Mn limit that is 200. This clearly means Yang et al. confirm that this limit is suitable for the invention disclosed in Yang et al.

Inasmuch as applicants specifically exclude a lower Mn of 200 and further teach a criticality associated with a lower Mn of 300, it is submitted that under the provisions of MPEP 2144.05, the teachings of Yang et al. cannot be relied upon as rendering applicant's claimed invention obvious.

Thus the combination of Ikemoto et al., Yang et al. and Hong does not render applicants' claimed invention obvious under 35 U.S.C. §103.

In applicants' paragraph [0038] it has disclosed that the amount of the  $\alpha$ -olefin added is dependent upon the propylene content in the sum total of the ethylene and propylene in the copolymerization rubber or in the blend rubber.

Neither Ikemoto et al. or Yang et al. or Hong teach or appreciate this relationship between the amount of  $\alpha$ -olefin used and the propylene content in the copolymerization rubber or in the blend rubber.

In this regard, it is noted that Ikemoto et al. teach "an EPDM rubber having a Mooney viscosity (LM 100°C) of 43 and comprising 50% ethylene, 4% diene, and by extension, 46% propylene and ..." The propylene content in sum total of ethylene and propylene in the copolymerization rubber is 48 wt.%.

Thus new claims 11 and 12 are separately distinguishable from Ikemoto et al.

With regard to Yang et al. teaching  $\alpha$ -olefins, it is note that the EPDM used in the present invention is not a polyolefin which are required by Yang et al.

Thus the teachings of Yang et al. are not applicable to applicants' claimed EPDM composition.

Further it is noted that the paraffinic plasticizer and the  $\alpha$ -olefin are used differently in the present invention as shown in Examples 2 and 3. Note the absence of a plasticizer in Example 1 does not have as large an impact on the composition as when no  $\alpha$ -olefin was used in the comparative examples.

Based upon the above distinctions between the prior art relied upon by the Examiner and the present invention, and the overall teachings of prior art, properly considered as a whole, it is respectfully submitted that the Examiner cannot rely upon

the prior art as required under 35 U.S.C. §103 to establish a *prima facie* case of obviousness of applicants' claimed invention.

It is, therefore, submitted that any reliance upon prior art would be improper inasmuch as the prior art does not remotely anticipate, teach, suggest or render obvious the present invention.

It is submitted that the claims, as now amended, and the discussion contained herein clearly show that the claimed invention is novel and neither anticipated nor obvious over the teachings of the prior art and the outstanding rejection of the claims should hence be withdrawn.

Therefore, reconsideration and withdrawal of the outstanding rejection of the claims and an early allowance of the claims is believed to be in order.

It is believed that the above represents a complete response to the Official Action and reconsideration is requested.

**Conclusion**

It is believed that the above represents a complete response to the Official Action and reconsideration is requested.

If upon consideration of the above, the Examiner should feel that there remain outstanding issues in the present application that could be resolved; the Examiner is invited to contact applicants' patent counsel at the telephone number given below to discuss such issues.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 23-1925 and please credit any excess fees to such deposit account.

Respectfully submitted,

Dated: December 30, 2009

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